



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,734	03/18/2004	Alex A. Behfar	BIN 9	5050
7590 William A. Blake Jones, Tullar & Cooper, P.C. P.O. Box 2266 Eads Station Arlington, VA 22202		12/07/2009	EXAMINER GOLUB, MARCIA A	
			ART UNIT 2828	PAPER NUMBER
			MAIL DATE 12/07/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/802,734

**Applicant(s)**

BEHFAR ET AL.

**Examiner**

MARCIA A. GOLUB

**Art Unit**

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 14-16, 25, 26 and 28-35 is/are pending in the application.
- 4a) Of the above claim(s) 2, 4, 14-16, 28-30 and 33-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 25, 26, 31 and 32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**  
***Response to Arguments***

Applicant's arguments have been considered but they are moot if view of new grounds of rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 6, 25, 26, 31 and 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Belfar-Rad et al. ("Etched-facet AlGaAs triangular-shaped ring lasers with output coupling" found in IDS) hereinafter IDS1, and further in view of Uchida et al. (6,043,104) hereinafter '104.

Fig 2 of IDS1 discloses:

1. "a substrate;  
an epitaxial structure [AlGaAs/GaAs] deposited on said substrate;  
a V-shaped semiconductor laser cavity formed in said epitaxial structure, said cavity having first and second legs, an optical axis parallel to said substrate and at least one output;

IDS1 does not disclose:

"at least one etched gap extending through one of said legs and separating said one of said legs into first and second spaced apart sections, said etched gap having two parallel etched facets that are perpendicular to said optical axis at said etched gap; and  
at least one distributed Bragg reflector (DBR) at said at least one output."

However, etched gaps separating the laser cavity are known in the art as evidenced by Fig 1 of '104. Also, placing a DBR at the end of the cavity is well known in the art as evidenced by Fig 22 of '104.

It would have been obvious to one of ordinary skill in the art at the time of the

invention to incorporate the teachings of '104 into the device of '983 by adding a gap through one of the legs for at least the purpose of making a composite cavity with improved polarization and phase control; and by adding a DBR for at least the purpose of providing wavelength selective feedback into the laser cavity.

IDS1 and '104 disclose a semiconductor device as described above, in addition:

3. "wherein said at least one of said legs through which said etched gap extends includes an active region through which said etched facets of said etched gap extend,"

IDS1 and '104 do not disclose:

"wherein said gap has a length of between about 0.001  $\mu\text{m}$  and about 10  $\mu\text{m}$ ."

However, '104 discloses that adjusting the length of the gap controls the phase of the light. (14/43-44) Therefore, '104 recognized the length of the gap to be a result effective variable.

It would have been obvious to one of ordinary skill in the art at the time of the invention to make the length of the gap between about 0.001  $\mu\text{m}$  and about 10  $\mu\text{m}$ , since it has been held that discovering an optimum value of result effective variable involves only routine skill in the art, see MPEP 2144.05.

Regarding **claims 25, 26, 31 and 32**, the arguments applied above to the apparatus described with regards to claims 1 and 3 are applicable to these claims as well.

***Contact Info***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARCIA A. GOLUB-MILLER whose telephone number is (571)272-8602. The examiner can normally be reached on M-Th 9:30-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Marcia A. Golub-Miller/

/Minsun Harvey/  
Supervisory Patent Examiner, Art Unit 2828